ANTIPERSPIRANT WITH ANHYDROUS COMPOSITIONS

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References Cited
U.S. PATENT DOCUMENTS

4,017,599 A 4/1977 Rubino
4,775,528 A 10/1988 Callaghan et al.
5,643,558 A 7/1997 Provancal et al.
6,010,688 A 1/2000 Shen
6,042,816 A 3/2000 Shen
6,245,325 B1 6/2001 Shen
6,435,748 B1 8/2002 Taghikhani .......... A45D 40/04 401/175

6,436,381 B1 8/2002 Carrillo et al.
6,663,854 B1 12/2003 Shen et al.
6,902,723 B2 6/2005 Shen
6,923,952 B2 8/2005 Allen et al.
8,518,385 B2 8/2013 Dierker ................. A61K 8/0229


FOREIGN PATENT DOCUMENTS

DE 19756454 C1 6/1999
DE 10332345 A1 7/2005
DE 102004019068 A1 9/2005
GB 2048229 A 12/1980
GB 229906 A 10/1996

* cited by examiner

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ABSTRACT

Anhydrous soft solid antiperspirant compositions include, relative to each case to the total weight of the composition, at least one fatty alcohol having 12 to 18 carbon atoms, at least one fatty alcohol having more than 18 carbon atoms, with the proviso that the total amount of fatty alcohols is 3 to 12 wt %, the weight ratio of fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a weight ratio range from 1:1 to 1:3.

20 Claims, No Drawings
US 9,399,006 B2

1. ANTIPERSPIRANT WITH ANHYDROUS COMPOSITIONS

FIELD OF THE INVENTION

The present invention generally relates to cosmetics to prevent body odor, in particular anhydrous compositions, which are applied as a non-aerosol.

BACKGROUND OF THE INVENTION

Compositions to prevent body odor are an important element of daily personal hygiene. They are designed to ensure that sweat formed during the course of the day through various activities (physical movement, work, sport) but also through psychological stress do not lead to unpleasant body odor. The deodorizing active ingredients contained in commercial deodorants are just as diverse as the constituents of sweat and the causes of the development of body odor. Odor absorbers, scents, deodorizing ion-exchangers, bacteriostatic agents, components having a probiotic effect and enzyme inhibitors can be used as cosmetic deodorizing active ingredients. In simplified terms, body odor is attributable to the bacterial decomposition of the organic constituents of sweat. In turn, some of the bacteria that are typical of the natural microflora of human skin, in particular gram-positive anaerobic cocci, for example Staphylococci, such as Staphylococcus hominis, and Corynebacteria, are responsible for the bacterial decomposition. As body odor is caused by bacterial activity, it can be prevented particularly effectively by the application of cosmetic agents (soaps, creams, powders, sticks, roll-ons, gels or sprays) containing antimicrobial active substances and perfume oil compositions. Triclosan and chlorhexidine are among the antimicrobial active substances used to produce deodorants. Moreover, essential oils such as clove oil (eugenol), peppermint oil (menthol) and thyme oil (thymol) are used as active ingredients for deodorants, although the pronounced inherent odor of these compounds limits the dose in which they are used. From an ecological perspective, triclosan, as an organic chlorine compound, is not without controversy. Essential oils have a relatively high allergenic potential, and this, in addition to their inherent odor, restricts their usage. Aromatic alcohols, such as for example 2-methyl-5-phenylpentan-1-ol, 2-phenylethan-1-ol or 3-phenylpropan-1-ol, are already known in the prior art as antimicrobial and deodorizing active ingredients. These compounds are highly effective, are also very well tolerated by the skin, and have only a weak inherent odor.

The aerosol spray, roll-on and antiperspirant stick have become established in the market as application forms for said compositions. Furthermore, deodorants in powder form (including compressed powders) or deodorants applied to a disposable substrate (such as a cloth or paper) are also known. “Soft solids” are known to the person skilled in the art as a particularly pleasant application form. These are viscous compositions which have a creamy texture and which are pressed out through one or more openings of a dispensing device of the applicator before use. This process exerts a pressure on the composition, under which the formulation often becomes unstable, causing one of its liquid constituents to separate out. This phenomenon is known as syneresis and is mostly to be observed in soft solids with a high oil content.

It is therefore desirable to provide a deodorizing cosmetic composition in the form of an anhydrous composition as a soft solid, which exhibits no or at least reduced syneresis. The composition should moreover impart a light, powdery and dry feel to the skin. When the composition comes into contact with textiles, the composition should wash easily out of the textiles.

Furthermore, other desirable features and characteristics of the present invention will become apparent from the subsequent detailed description of the invention and the appended claims, taken in conjunction with the accompanying drawings and this background of the invention.

BRIEF SUMMARY OF THE INVENTION

An anhydrous composition including, relative in each case to the total weight of the composition, at least one antiperspirant active ingredient, at least one oil in a total amount from 20 to 80 wt. %, at least one fatty alcohol having 12 to 18 carbon atoms, at least one fatty alcohol having more than 18 carbon atoms, with the proviso that the total amount of fatty alcohols is 3 to 12 wt. %, the weight ratio of fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a weight ratio range from 1:1 to 1:3.

DETAILED DESCRIPTION OF THE INVENTION

The following detailed description of the invention is merely exemplary in nature and is not intended to limit the invention or the application and uses of the invention. Furthermore, there is no intention to be bound by any theory presented in the preceding background of the invention or the following detailed description of the invention.

It was found that the above objects and others are met by an anhydrous compositions containing, relative in each case to the total weight of the composition, at least one antiperspirant active ingredient, at least one oil in a total amount from 20 to 80 wt. %, at least one (in particular solid) fatty alcohol having 12 to 18 carbon atoms, at least one (in particular solid) fatty alcohol having more than 18 carbon atoms, with the proviso that the total amount of (in particular solid) fatty alcohols is 3 to 12 wt. %, the weight ratio of (in particular solid) fatty alcohols having 12 to 18 carbon atoms to the other (in particular solid) fatty alcohols is in a weight ratio range from 1:1 to 1:3.

Fatty alcohols are understood according to the invention to be primary alcohols in the form of monohydricol compounds of a linear, aliphatic hydrocarbon, wherein said hydrocarbon has at least 12 carbon atoms and bears no further substituents apart from the hydroxyl group.

All details of the states of aggregation of the starting substances that are used (solid, liquid, etc.) in this application relate to normal conditions. “Normal conditions” within the meaning of the present application are a temperature of 20°C and a pressure of 1013.25 mbar. Melting point details likewise relate to a pressure of 1013.25 mbar.

The term “anhydrous” is understood according to the invention to mean that the compositions contain 0 to a maximum of 3 wt. %, preferably 0 to a maximum of 2 wt. %, of free water, relative to the total composition. The content of water of crystallization, water of hydration or similarly molecularly bound water that may be contained in the constituents used, in particular in sweat-inhibiting active ingredients that are optionally included, do not constitute free water within the meaning of the present application.

The compositions according to the invention must include at least one sweat-inhibiting active ingredient, also referred to
as an antiperspirant active ingredient, to support the overall deodorant performance of the product.

More preferred compositions according to the invention are characterized in that the at least one antiperspirant active ingredient is included in an amount from 3 to 35 wt. %, preferably 5 to 30 wt. % and more preferably 10 to 23 wt. %, relative to the total weight of active substance (USP) free from water of crystallization in the total composition.

Preferred antiperspirant active ingredients are selected from the water-soluble astringent inorganic and organic salts of aluminum, zirconium and zinc and any mixtures of these salts.

According to the invention water solubility is understood to mean a solubility of at least 5 wt. % at 20°C, in other words amounts of at least 5 g of the antiperspirant active ingredient are soluble in 95 g of water at 20°C.

More preferred antiperspirant active ingredients are selected from aluminum chlorohydrite, in particular aluminum chlorohydrite of the general formula [Al(OH)Cl]_2·1-6 H_2O, preferably [Al(OH)Cl]_2·2·3 H_2O, which can be present in non-activated or in activated (depolymerized) form, and aluminum chlorohydrite of the general formula [Al(OH)Cl]_2·1-6 H_2O, preferably [Al(OH)Cl]_2·2·3 H_2O, which can be present in non-activated or in activated (depolymerized) form.


Also preferred are aluminum sesquichlorohydrate, aluminum dichlorohydrite, aluminum chlorohydridox propylene glycol (PG) or aluminum chlorohydridox polyethylene glycol (PEG), aluminum or aluminum zirconium glycol complexes, e.g. aluminum or aluminum zirconium glycol complexes, aluminum sesquichlorohydride PEG, aluminum PG dichlorohydride or aluminum PEG dichlorohydride, aluminum hydroxide, selected furthermore from aluminum zirconium chlorohydrates, such as aluminum zirconium trichlorohydride, aluminum zirconium tetrachlorohydride, aluminum zirconium pentachlorohydride, aluminum zirconium octachlorohydride, aluminum zirconium chlorohydridox glycine complexes such as aluminum zirconium trichlorohydridox glycine, aluminum zirconium tetrachlorohydridox glycine, aluminum zirconium pentachlorohydridox glycine, aluminum zirconium octachlorohydridox glycine, potassium aluminum sulfate (KAl(SO_4)_2·12 H_2O, alum), aluminum undecylenol collagen amino acid, sodium aluminum lactate, sodium chloride, sodium lactate, aluminum sulfate, sodium aluminum lactate, aluminum chloride, complexes of zinc and sodium salts, complexes of lanthanum and cerium, aluminum salts of lipoamino acids, aluminum sulfate, aluminum chloride, hydroxyallantoin, sodium aluminum hydroxyallantoin, zinc chloride, zinc sulfocate, zinc sulfate, zirconol oxalides, in particular zirconol oxylchlorides, zirconol hydroxyallantoin, in particular zirconol hydroxychlorides (zirconium chlorohydrate).

Antiperspirant active ingredients that are more preferred according to the invention are selected from "activated" aluminum and aluminum zirconium salts, which are also described as antiperspirant active ingredients with enhanced activity. Such active ingredients are known in the prior art and are also available commercially. Their production is disclosed in GB 2048229, U.S. Pat. No. 4,775,528 and U.S. Pat. No. 6,010,688, for example. Activated aluminum and aluminum zirconium salts are generally produced by heat treating a relatively dilute solution of the salt (e.g. approximately 10 wt. %) to increase its HPLC peak 4 to peak 3 surface area ratio. The activated salt can then be dried, in particular spray-dried, to form a powder. In addition to spray drying, drum drying for example is also suitable.

Activated aluminum and aluminum zirconium salts typically have an HPLC peak 4 to peak 3 surface area ratio of at least 0.4, preferably at least 0.7, more preferably at least 0.9, wherein at least 70% of the aluminum can be assigned to these peaks.

Activated aluminum and aluminum zirconium salts do not necessarily have to be used as a spray-dried powder. Sweat-inhibiting active ingredients that are likewise preferred according to the invention are non-aqueous solutions or solubilizes of an activated sweat-inhibiting aluminum or aluminum zirconium salt, for example according to U.S. Pat. No. 6,010,688, which are stabilized against loss of activation by the rapid degradation of the HPLC peak 4 to peak 3 surface area ratio of the salt by the addition of an effective amount of a polyhydric alcohol having 3 to 6 carbon atoms and 3 to 6 hydroxyl groups, preferably propylene glycol, sorbitol and pentaerythritol. Compositions are preferred for example that include in percent by weight (USP): 18 to 45 wt. % of an activated aluminum or aluminum zirconium salt, 55 to 82 wt. % of at least one unhydrous polyhydric alcohol having 3 to 6 carbon atoms and 3 to 6 hydroxyl groups, preferably propylene glycol, butylene glycol, diethylene glycol, dipropylene glycol, glycerol, sorbitol and pentaerythritol, more preferably propylene glycol.

Complexes of activated sweat-inhibiting aluminum or aluminum zirconium salts with a polyhydric alcohol including 20 to 50 wt. %, more preferably 20 to 42 wt. %, of activated sweat-inhibiting aluminum or aluminum zirconium salt and 2 to 16 wt. % of molecularly bound water are also more preferred, wherein the remainder up to 100 wt. % is made up by at least one polyhydric alcohol having 3 to 6 carbon atoms and 3 to 6 hydroxyl groups. Propylene glycol, propylene glycol/ sorbitol mixtures and propylene glycol/pentaerythritol mixtures are preferred alcohols of this type. Such complexes of an activated sweat-inhibiting aluminum or aluminum zirconium salt with a polyhydric alcohol that are preferred according to the invention are disclosed in U.S. Pat. No. 5,643,558 and U.S. Pat. No. 6,245,325 for example.

Further preferred sweat-inhibiting active ingredients are basic calcium aluminum salts such as are disclosed in U.S. Pat. No. 2,571,030 for example. These salts are produced by reacting calcium carbonate with aluminum chlorohydroxide or aluminum chloride and aluminum powder or by adding calcium chloride dihydrate to aluminum chlorohydroxide.

Further preferred sweat-inhibiting active ingredients are aluminum zirconium complexes such as are disclosed in U.S. Pat. No. 4,017,599 for example, which are buffered with salts of amino acids, in particular with alkali and alkaline-earth glycinites.

Further preferred sweat-inhibiting active ingredients are activated aluminum or aluminum zirconium salts, such as are disclosed in U.S. Pat. No. 6,245,325 or U.S. Pat. No. 6,042,816 for example, including 5 to 78 wt. % (USP) of an activated sweat-inhibiting aluminum or aluminum zirconium salt, an amino acid or hydroxyalkanoic acid in an amount to provide a weight ratio of (amino acid or hydroxyalkanoic acid) to (Al+Zr) of 2:1 to 1:20 and preferably 1:1 to 1:10, and a water-soluble calcium salt in an amount to provide a weight ratio of (Ca) to (Al+Zr) of 1:1 to 1:28 and preferably 1:2 to 1:25. More preferred solid activated sweat-inhibiting salt compositions, according to U.S. Pat. No. 6,245,325 or U.S. Pat. No. 6,042,816 for example, include 48 to 78 wt. % (USP), preferably 60 to 75 wt. % of an activated aluminum or aluminum

\[ \text{US 9,399,006 B2} \]
zirconium salt and 1 to 16 wt. %, preferably 4 to 13 wt. % of molecularly bound water (water of hydration), also sufficient water-soluble calcium salt that the weight ratio of Ca to (Al+Zr) is 1:1 to 1:28, preferably 1:2 to 1:25, and sufficient amino acid that the weight ratio of amino acid to (Al+Zr) is 2:1 to 2:20, preferably 1:1 to 1:10.

Further more preferred solid sweat-inhibiting activated salt compositions, according to U.S. Pat. No. 6,902,723 for example, include 48 to 78 wt. % (USP), preferably 66 to 75 wt. % of an activated aluminum or aluminum zirconium salt and 1 to 16 wt. %, preferably 4 to 13 wt. % of molecularly bound water, also sufficient water-soluble strontium salt that the weight ratio of Sr to (Al+Zr) is 1:1 to 1:28, preferably 1:2 to 1:25, and sufficient hydroxyalkanoic acid that the weight ratio of hydroxyalkanoic acid to (Al+Zr) is 2:1 to 2:25, and sufficient glycine that the weight ratio of glycine to (Al+Zr) is 2:1 to 2:25, preferably 1:1 to 1:10.

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US 9,399,006 B2

M:CI=0.98 to 0.9) and very preferably m=1.04 to 1.11 (corresponding to M:CI=0.96 to 0.9).

These salts generally include a little associatively bound water of hydration, typically 1 to 6 mol of water per mol of salt, corresponding to 1 to 16 wt. %, preferably 4 to 13 wt. % of water of hydration.

The preferred aluminum zirconium chlorohydrates are conventionally associated with an amino acid to prevent polymerization of the zirconium species during production. Preferred stabilizing amino acids are selected from glycine, alanine, leucine, isoleucine, β-alanine, cysteine, valine, serine, tryptophan, phenylalanine, methionine, β-mino-n-butanoic acid and γ-amino-n-butanoic acid and the salts thereof, in each case in the d form, 1 form, or dI form; glycine is more preferred. The amino acid is included in the salt in an amount from 1 to 3 mol, preferably 1.3 to 1.8 mol, in each case per mol of zirconium.

Preferred sweat-inhibiting salts are aluminum zirconium tetrachlorohydrate (Al:Zr=2-6; M:CI=0.9-1.3), in particular salts with a molar metal to chloride ratio of 0.9 to 1.1, preferably 0.9 to 1.0.

Also preferred according to the invention are aluminum zirconium chloride glycine salts stabilized with betaine (CH₃)₃N⁺—CH₂—COO⁻). More preferred corresponding compounds have a molar total (betaine•glycine)/Zr ratio of (0.1 to 3.0):1, preferably (0.7 to 1.5):1, and a molar ratio of betaine to glycine of at least 0.001:1. Corresponding compounds are disclosed in U.S. Pat. No. 7,105,691 for example.

In a more preferred embodiment according to the invention an “activated” salt is included as a particularly effective antiperspirant salt, in particular one with a high HPLC peak 5 aluminum content, in particular with a peak 5 surface area of at least 33%, more preferably at least 45%, relative to the total surface area under peaks 2 to 5, measured by HPLC of a 10 wt. % aqueous solution of the active ingredient under conditions in which the aluminum species is dissolved into at least 4 successive peaks (referred to as peaks 2 to 5). Preferred aluminum zirconium salts having a high HPLC peak 5 aluminum content (also referred to as “E³AZCh”) are disclosed in U.S. Pat. No. 6,436,381 and U.S. Pat. No. 6,649,152 for example.

Such activated “E³AZCh” salts are also preferred in which the HPLC peak 4 to peak 3 surface area ratio is at least 0.4, preferably at least 0.7, more preferably at least 0.9.

Further more preferred antiperspirant active ingredients are aluminum zirconium salts having a high HPLC peak 5 aluminum content that are additionally stabilized with a water-soluble strontium salt and/or with a water-soluble calcium salt. Corresponding salts are disclosed in U.S. Pat. No. 6,923,952 for example.

Further preferred antiperspirant active ingredients are selected from astringent titanium salts such as are disclosed in GB 2299506 A for example.

The antiperspirant active ingredients can be used as non-aqueous solutions or as glycolic solubilates.

In a more preferred embodiment the composition includes an astringent aluminum salt, in particular aluminum chlorohydrate, which is sold for example in powder form as Micro Dry® Ultrafine or Superultrafine by Reheis, Microdry 323 by Summit, as Chlorhydro® and in activated form as Reach® 501 by Reheis. An aluminum sesquichlorohydrate that is likewise more preferred is also offered by Reheis under the name Reach® 301. Activated aluminum chlorohydrates that are available under the names Reach® 101 and Reach® 103, AACH-7171 from Reheis or Summit are also more preferred.

The use of aluminum zirconium tetrachlorohydrate glycine complexes, which are commercially available in powder form under the name Rezal® 36 GP from Reheis or AZG-364 or 369 from Summit, in activated grade, as Reach® 908, can also be more preferred according to the invention. Aluminum zirconium pentachlorohydrate glycine complexes (AAZG-3108 or AZG-3110 from Summit) can also be used.

The composition according to the invention must also include at least one oil in said total amount. An oil is understood to be included in the invention to be a liquid substance that is less than 1 wt. % miscible in bidistilled water under normal conditions.

It is preferable according to the invention for oils to be included in the composition according to the invention in a total amount, relative to the weight of the composition, of 30 to 80 wt. %, more preferably 40 to 75 wt. %, particularly preferably 45 to 70 wt. %.

The composition according to the invention more preferably includes at least one volatile oil as the oil. It is in turn preferable for the volatile oils to be included in the composition according to the invention in a total amount, relative to the weight of the composition, of 30 to 80 wt. %, more preferably 40 to 75 wt. %, particularly preferably 45 to 70 wt. %.

A volatile oil is understood according to the invention to refer to oils that have a vapor pressure of 0.01 kPa or more at 293.15 K.

Oils that are preferred according to the invention are selected from silicone oils, which include for example dialkyl and alkylaryl siloxanes, such as for example cyclopentasiloxane, cyclhexasiloxane, dimethyl polysiloxane and methylphenyl polysiloxane, but also hexamethyl disiloxane, octamethyl trisiloxane and decamethyl tetrasiloxane.

More preferred volatile oils are volatile silicone oils and non-volatile silicone oils. Volatile silicone oils, which can be cyclic, such as for example octamethyl cyclo-tetrasiloxane, decamethyl cyclopentasiloxane and mixtures thereof, such as are included for example in the commercial products DC 244, 245, 544 and 345 from Dow Corning, are preferred according to the invention. Volatile linear silicone oils are likewise preferably, in particular hexamethyl disiloxane (L₁), octamethyl trisiloxane (L₂), decamethyl tetrasiloxane (L₃) and any two-component and three-component mixtures of L₁, L₂ and/or L₃ preferably mixes such as are included for example in the commercial products DC2-1184, Dow Corning® 200 (0.65 cSt) and Dow Corning® 200 (1.5 cSt) from Dow Corning.

Volatile silicone oils are outstandingly suitable according to the invention because they impart a pleasant skin feel to the composition according to the invention, with little staining of clothing. Compositions that are more preferred according to the invention are thus characterized in that they include at least one volatile silicone oil. It is in turn preferable for the volatile silicone oils to be included in the composition according to the invention in a total amount, relative to the weight of the composition, of 20 to 80 wt. %, in particular 30 to 80 wt. %, more preferably 40 to 75 wt. %, particularly preferably 45 to 70 wt. %.

In addition to or in place of the at least one volatile silicone oil, at least one volatile non-silicone oil can also be included. Preferred volatile non-silicone oils are selected from C₄-C₁₆ isoparaffins, in particular from isodecane, isododecane, isotradecane and isohexadecane, as well as mixtures thereof. C₁₀-C₁₃ isoparaffin (e.g. the commercial product Pioneer 2094 from Hanson & Rosenthal) is preferably suitable in particular.

This at least one volatile non-silicone oil is also preferably included in a total amount of 20 to 80 wt. %, more preferably 30 to 80 wt. %, particularly preferably 40 to 75 wt. %, relative in each case to the total weight of the composition.
Owing to the skin feel and the stability of the resulting compositions, silicone oils are preferred over isoparaffins as the volatile oil.

In addition to the aforementioned substances conventionally referred to as volatile silicone oils and in addition to the aforementioned volatile non-silicone oils, the compositions according to the invention can additionally include at least one non-volatile oil selected from non-volatile silicone oils and non-volatile non-silicone oils.

Preferred non-volatile silicone oils are selected from higher-molecular-weight linear dimethyl polysiloxanes, available commercially for example under the name Dow Corning® 190, Dow Corning® 200 Fluid with kinematic viscosities (25°C) in the range from 5 to 100 cSt, preferably 5 to 50 cSt or 5 to 10 cSt, and Baysilone® 350 M with a kinematic viscosity (25°C) of approximately 350 cSt.

Non-volatile silicone oils that are likewise preferred according to the invention are selected from siloxanes of formula (Sil-1), in which \( x \) is selected from whole numbers from 1 to 20, preferably 1 to 3.

A preferred silicone oil of formula (Sil-1) is available under the INCI name Phenyl Trimethicone.

Natural and synthetic hydrocarbons, such as for example paraffin oils, \( C_{18-20} \) isoparaffins, in particular isoisooctane, polyisobutenes or polydecanes, which are available for example under the name Emery® 3004, 3006, 3010 or under the name EthylHex® from Albermarle or Nexbase® 2004G from Nestle, as well as 1,3-di-(2-ethylhexyl)cyclohexane (available for example under the trade name Cetiol® S from Cognis), likewise belong to the non-volatile non-silicone oils that are preferred according to the invention.

Further non-volatile non-silicone oils that are preferred according to the invention are selected from the commercial products Finosolv® TN, benzoic acid isostearyl esters, available for example as the commercial product Finosolv® SB, ethylhexyl benzate, available for example as the commercial product Finosolv® EB, and benzoic acid octyl dodecyl esters, available for example as the commercial product Finosolv® BOD, are more preferred.

Further non-volatile non-silicone oils that are preferred according to the invention are selected from the triglycerides of linear or branched, saturated or unsaturated, optionally hydroxylated \( C_{8-30} \) fatty acids. The use of natural oils, for example soybean oil, cottonseed oil, sunflower oil, palm oil, palm kernel oil, linseed oil, almond oil, castor oil, corn oil, rapeseed oil, olive oil, sesame oil, thistle oil, wheat germ oil, peach kernel oil and the liquid components of coconut butter and the like, can be particularly suitable. Synthetic triglyceride oils are also suitable, however, in particular capric/caprylic triglycerides, for example the commercial products Myritol® 318, Myritol® 331 (Cognis) or Miglyol® 812 (Hüls) with unbranched fatty acid esters, as well as glyceryl tristearin and the commercial products Estol® GTEH 3609 (Uniqema) or Myritol® GTEH (Cognis) with branched fatty acid esters.

Further non-volatile non-silicone oils that are more preferred according to the invention are selected from the dicarboxylic acid esters of linear or branched \( C_{5-10} \) alkanols, in particular diisopropyl adipate, di-n-butyl adipate, di(2-ethylhexyl) adipate, diocytel adipate, diethyl/di-n-butyl/diocytel sebacate, diisopropyl sebacate, diocytel malate, diocytel maleate, dicaprylyl maleate, diisooyctyl succinate, di-2-ethylhexyl succinate and di-(2-hexyloxyethyl) succinate.

Further non-volatile non-silicone oils that are more preferred according to the invention are selected from the esters of linear or branched saturated or non-volatile non-silicone oils, esters of unsaturated alkanols having 2 to 30 carbon atoms with linear or branched fatty acids having 2 to 30 carbon atoms, which can be hydroxylated. These include hexyloxyethyl stearate (Eutanol® G 16 S), hexyloxyethyl laurate, isodecyl neopentanoate, isononyl isononanoate, 2-ethylhexyl palmitate (Cegesoft® C 24) and 2-ethylhexyl stearate (Cetiol® 868). Likewise preferred are isopropyl myristate, isopropyl palmitate, isopropyl steareate, isopropyl isostearate, isopropyl oleate, isoctyl steareate, isononyl steareate, isocetyl steareate, isononyl isononanoate, isostearoyl isononanoate, cetearyl isononanoate, 2-ethylhexyl laurate, 2-ethylhexyl isostearate, 2-ethylhexyl cocoate, 2-octyldodecyl palmitate, butyl octanoic acid-2-butyl octanoate, dioctyldecanoate, n-butyl steareate, n-hexyl laurate, n-decyl oleate, oleyl oleate, erucyl oleate, erucyl erucate, ethylene glycol dioleate and dipalmitate.

Further non-volatile non-silicone oils that are more preferred according to the invention are selected from the addition products of 1 to 5 propylene oxide units with mono- or polyhydric \( C_{8-22} \) alkanols such as octanol, decanol, undecanol, lauryl alcohol, myristyl alcohol and stearyl alcohol, for example PPG-2 myristyl ether and PPG-3 myristyl ether ( Witcon® AP). Further non-volatile non-silicone oils that are more preferred according to the invention are selected from the addition products of at least 6 ethylene oxide and/or propylene oxide units with mono- or polyhydric \( C_{8-22} \) alkanols such as glycerol, butanol, butanediol, myristyl alcohol and stearyl alcohol, which can be esterified if desired, for example PPG-14 butyl ether (Ucon Fluid® AP), PPG-9 butyl ether (Breko® B25), PPG-10 butanediol (Macoil® 57), PPG-15 stearyl ether (Arilmo® E) and Glycereth-7 diisononanoate.

Further non-volatile non-silicone oils that are more preferred according to the invention are selected from the \( C_{8-22} \) alkyl esters of mono- or polybasic \( C_{5-10} \) hydroxylic acids, in particular the esters of glycolic acid, lactic acid, malic acid, tartaric acid, citric acid and salicylic acid. Such esters based on linear \( C_{14-15} \) alkanols, for example \( C_{12-14} \) alkyl lactate, and on \( C_{12-13} \) alkanols branched in 2-position are available under the trade mark Cosmocol® from Nordmann, Rassmann GmbH & Co, Hamburg, in particular the commercial products Cosmocol® ESI, Cosmocol® EMI and Cosmocol® ETI.

Further non-volatile non-silicone oils that are more preferred according to the invention are selected from the symmetrical, asymmetrical or cyclic esters of carboxylic acid with alkanols, for example glycerol carbonate, dicaprylyl carbonate (Cetiol® CC) or the esters according to the teaching of DE 19756454 A1.

Further oils that can be preferably according to the invention are selected from the esters of dimers of unsaturated \( C_{12-22} \).
fatty acids (dimer fatty acids) with monohydric linear, branched or cyclic C₃₋C₁₈ alkanols or with polyhydric linear or branched C₃₋C₁₈ alkanols.

It is preferable according to the invention for the compositions according to the invention to include the non-volatile oils in a total amount of 0 to 20 wt. %, in particular 0 to 10 wt. %, relative to the total weight of the composition.

The composition according to the invention must include a defined mixture of fatty alcohols.

It is preferable according to the invention for the fatty alcohols used to produce the composition according to the invention to be in solid form and for all definitions relating to fatty alcohols to relate to solid fatty alcohols within the meaning of the application and for liquid fatty alcohols to be attributed exclusively to the oil component of the composition according to the invention.

In a ratio of (i) the weight ratio of the fatty alcohols having 18 carbon atoms in a total amount of 2.0 to 5.0 wt. %, relative to the total weight of the composition.

It is preferable according to the invention for the composition to include the fatty alcohols having 18 carbon atoms in a total amount of 0.8 to 2.0 wt. %, relative to the total weight of the composition.

It is preferable according to the invention for the composition to include the fatty alcohols having 20 to 28 carbon atoms in a total amount of 0.2 to 2.0 wt. %, relative to the total weight of the composition.

It is preferable according to the invention for the composition to include the fatty alcohols having 0 to 38 carbon atoms in a total amount of 0.1 to 1.5 wt. %, relative to the total weight of the composition.

It is preferable according to the invention for the composition to include the fatty alcohols having 40 to 48 carbon atoms in a total amount of 0.2 to 0.7 wt. %, relative to the total weight of the composition.

Initially independently thereof, it is preferable for the composition according to the invention to include less than 0.05 wt. % of fatty alcohols having more than 50 carbon atoms, relative to the total weight of the composition.

Initially independently thereof, it is preferable for the weight ratio of (in particular solid) fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols to be in a weight ratio range from 1:1 to 1:1.3.

Initially independently thereof, it is preferable for the weight ratio of (in particular solid) fatty alcohols having 20 to 28 carbon atoms to fatty alcohols having 30 to 38 carbon atoms to be in a weight ratio range from 1:0.5 to 1:2, in particular from 1:0.9 to 1:0.6.

Initially independently thereof, it is preferable for the weight ratio of (in particular solid) fatty alcohols having 20 to 28 carbon atoms to fatty alcohols having 40 to 48 carbon atoms to be in a weight ratio range from 1:0.1 to 1:1, in particular from 1:0.2 to 1:0.4.

It is in turn more preferable according to the invention if (i) the weight ratio of (in particular solid) fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a weight ratio range from 1:1 to 1:1.3, in particular from 1:1 to 1:1.3, and

(ii) the weight ratio of (in particular solid) fatty alcohols having 20 to 28 carbon atoms to fatty alcohols having more than 28 carbon atoms is distributed as follows:

(ii-1) the weight ratio of (in particular solid) fatty alcohols having 20 to 28 carbon atoms to fatty alcohols having 30 to 38 carbon atoms is in a weight ratio range from 1:0.5 to 1:2, in particular from 1:0.9 to 1:0.6,
Compositions that are preferred according to the invention are characterized in that they include at least one hydrophobed clay mineral in a total amount of 0.5 to 10 wt. %, preferably 1 to 7 wt. %, more preferably 2 to 6 wt. %, exceptionally preferably 3 to 5 wt. %, relative in each case to the total weight of the composition according to the invention.

Further lipophilic thickening agents that are preferred according to the invention are selected from fumed silicas, for example the commercial products of the Aerosil® range from Evonik Degussa. Hydrophobed fumed silicas are more preferred, more preferably silica silylate and silica dimethyl silylate.

Compositions that are preferred according to the invention are characterized in that they include at least one fumed silica, preferably at least one (preferably hydrophobed) fumed silica, in a total amount of 0.5 to 10 wt. %, preferably 1 to 7 wt. %, more preferably 2 to 6 wt. %, exceptionally preferably 3 to 5 wt. %, relative in each case to the total weight of the composition according to the invention.

Further compositions that are preferred according to the invention are characterized in that they include at least one hydrophobed fumed silica and at least one hydrophilic silica.

Further lipophilic thickening agents that are preferred according to the invention are selected from ethylene/propylene/styrene copolymers and butylene/ethylene/styrene copolymers. The copolymers are more preferably used as a pre-thickened oil-based gel. Such gels are obtainable for example under the commercial name Versagel® (from Penreco). Gels with mineral oil, hydrogenated polyisobutene, isoparaffins, such as isohexadecane or isododecane, and with ester oils, in particular with isopropyl palmitate or isopropyl myristate, are preferred.

Compositions that are preferred according to the invention are characterized in that they include at least one ethylene/propylene/styrene copolymer and/or butylene/ethylene/styrene copolymer in a total amount of 0.05 to 3 wt. %, preferably 0.1 to 2 wt. %, more preferably 0.2 to 1.0 wt. %, exceptionally preferably 0.3 to 0.5 wt. %, relative in each case to the total weight of the composition according to the invention.

Further lipophilic thickening agents that are preferred according to the invention are selected from silicone elastomers. A further preferred embodiment of the invention is characterized in that at least one silicone elastomer, which is obtainable by crosslinking an organopolysiloxane having at least two C₂₃-C₃₀ alkylene groups with a terminal double bond in each molecule with an organopolysiloxane having at least two silicon-bound hydrogen atoms in each molecule, is included.

Organopolysiloxanes having at least two C₂₃-C₃₀ alkylene groups with a terminal double bond in the molecule that are more preferred according to the invention are selected from methylvinylsiloxanes, methylyvinylsiloxane-methylhydrosiloxane copolymers, dimethylpolysiloxanes with dimethylvinylsiloxysilox end groups, dimethylsiloxane-methylhydrosiloxane copolymers with dimethylvinylsiloxysilox end groups, dimethylsiloxane-diphenylsiloxane-methylhydrosiloxane copolymers with dimethylvinylsiloxysilox end groups, dimethylsiloxane-methylhydrosiloxane copolymers with trimethylsilyloxy end groups, dimethylsiloxane-methylhydrosiloxane copolymers with dimethylvinylsiloxysilox end groups, dimethylsiloxane-methylhydrosiloxane copolymers with trimethylsilyloxy end groups, methyl-(3,3,3-trifluoropropyl)polysiloxanes with dimethylvinylsiloxysilox end groups and dimethylsiloxane-methyl-(3,3,3-trifluoropropyl)polysiloxanes with dimethylvinylsiloxysilox end groups.

Crosslinking organopolysiloxanes having at least two silicone-bound hydrogen atoms that are more preferred according to the invention are selected from methyl hydrogen polysiloxanes with trimethylsiloxy end groups, dimethylsiloxane-methyl hydrogen siloxane copolymers with trimethylsilyloxy end groups and cyclic dimethylsiloxane-methyl hydrogen siloxane copolymers.

More preferred silicone elastomers according to the invention which as a raw material are already present pre-swollen in a silicone that is liquid at room temperature under normal conditions and which constitute a silicone-based gel are commercially available, for example under the trade names Dow Corning 9040 Silicone Elastomer Blend (a cyclomethicone (and) dimethicone copolymer from Dow Corning; silicone elastomer content 12-13 wt. %), SFE 168, a cyclomethicone (and) dimethicone/vinyl dimethicone copolymer from GE Silicones, vinyl dimethicone copolymers, included in KSG-15 (cyclomethicone (and) dimethicone/vinyl dimethicone copolymer, silicone elastomer content 4-10 wt. %), KSG-16 (dimethicone (and) dimethicone/vinyl dimethicone copolymer, silicone elastomer content 20-30 wt. %), KSG-17 (cyclomethicone (and) dimethicone/vinyl dimethicone copolymer), KSG-18 (polytrimethicone (and) dimethicone/phenyl vinyl dimethicone copolymer, silicone elastomer content 10-20 wt. %); and KSG-20, obtainable from Shin Etsu Silicones of America (Akron, Ohio), and from Grant Industries Inc. (Elmwood Park, N.J.) the products from the Gransil® range, in particular Gransil SR-CYC (cyclomethicone and stearylvinyl/hydromethylsiloxane copolymer), Gransil® RPS Gel (INCI name: Cyclopentasiloxane and Polysilicone-11), Gransil® GCM-4 (INCI name: Cyclotetrasiloxane and Polysilicone-11), Gransil® GCM-5 (INCI name: Cyclopentasiloxane and Polysilicone-11), Gransil® RPS (INCI name: Cyclopentasiloxane and Polysilicone-11), G1-CD 10 (INCI name: Cyclopentasiloxane (and) Stearoylmethicone/Dimethicone Copolymer (and) Dimethicone), Gransil® IDS (INCI name: Isododecane (and) Cyclotetrasiloxane (and) Polysilicone-11), Gransil® PC-12 (INCI name: Isododecane (and) Polysilicone-11), Gransil® IDS-5 (INCI name: Isododecane (and) Cyclopentasiloxane (and) Polysilicone-11), Gransil® APK-1 (INCI name: Dimethicone and Cyclotetrasiloxane and Polysilicone-11 and Nylon-12 and Methyl Methacrylate/Acrylonitrile Copolymer and PEG-10 Dimethicone and Polysorbate-40 and Isohexadecane and Ammonium Polycryloyldimethyl Taurate), Gransil® DMCM-5 (INCI name: Dimethicone and Cyclotetrasiloxane and Polysilicone-11), Gransil® DMG-6 with dimethicone (6 cSt) (INCI name: Dimethicone and Polysilicone-11), Gransil® DMG-20 with dimethicone (20 cSt) (INCI name: Dimethicone and Polysilicone-11), Gransil® AM-8 Gel (INCI name: Caprylyl Methicone and Cyclotetrasiloxane and Polysilicone-11), Gransil® DM 5 with dimethicone (5 cSt) (INCI name: Dimethicone and Polysilicone-11), Gransil® DMID (INCI name: Dimethicone and Isododecane and Polysilicone-11), Gransil® PM (INCI name: Phenyl Trimethicone and Polysilicone-11), Gransil® ININ (INCI name: Isononyl Isononanoate (and) Polysilicone-11).

Silicone elastomers which as a raw material are already present pre-swollen in a silicone that is liquid at room temperature under normal conditions, mixed with a non-silicone-including oil, fat or wax, and which constitute a silicone-/non-silicone-based gel can likewise be used to advantage in the compositions according to the invention. Such silicone elastomer compositions are likewise commercially available, for example under the trade names Gransil® MLB (INCI name: Cyclotetrasiloxane and Polysilicone-11 and Beeswax), Gransil® PS (INCI name: Cyclotetrasiloxane and Polysilicone-11 and Petrolatum), Gransil® PS-5 (INCI name: Cyclotetrasiloxane and Polysilicone-11 and Petrolatum), Gran-
low volatility essential oils, which are mostly used as aroma components, are also suitable as perfume oils, for example sage oil, chamomile oil, melissa oil, mint oil, cinnamon leaf oil, lime blossom oil, juniper berry oil, vetiver oil, oliban oil, galbanum oil, oudamum oil, clove oil, iso-eugenol, thyme oil, bergamot oil, geraniol oil and rose oil.

Compositions that are preferred according to the invention include at least one scent and/or at least one perfume oil in a total amount of 0.01 to 10 wt. %, preferably 0.1 to 5 wt. %, more preferably 0.5 to 3 wt. %, exceptionally preferably 1 to 2 wt. %, relative in each case to the total weight of the composition according to the invention.

Preferred compositions according to the invention are characterized in that they additionally include at least one deodorant active ingredient. Preferred such deodorant active ingredients are selected from odor absorbers, deodorizing ion-exchangers, bacteriostatic substances, substances having a prebiotic effect and enzyme inhibitors and, more preferably, combinations of said deodorant active ingredients.

Silicates serve as odor absorbers, which at the same time advantageously also support the rheological properties of the composition according to the invention. The silicates that are particularly advantageous according to the invention include above all phyllosilicates and of those in particular montmorillonite, kaolinite, illite, beidellite, nontronite, saponite, hectorite, bentonite, smectite and talc. Further advantageous odor absorbers are for example zeolites, zinc ricinoleate, cyclodextrins, certain metal oxides, such as for example aluminum oxide, and chlorophyll.

Bacteriostatic or antimicrobial active ingredients are understood according to the invention to be active ingredients that reduce the number of skin bacteria involved in odor formation or inhibit their growth. These bacteria include inter alia various species from the group of Staphylococci, the group of Corynebacteria, Anaerococci and Micrococci.

Organohalogen compounds and organonitriles, quaternary ammonium compounds, a series of plant extracts and zinc compounds are preferred in particular according to the invention as bacteriostatic or antimicrobial active ingredients. These include inter alia triecosan, chlorhexidine and chlorhexidine gluconate, 3,4,4’-richloroarbanilide, bromochlorophene, dichlorophene, chlorothyl, chloroxylenol, hexachlorophene, dichloro-m-xylene, dequalinium chloride, domiphen bromide, ammonia phenol sulfonate, benzenzonic halides, benzenzonic cetyl phosphate, benzenzonic succharinates, benzenzonic chloride, cetyl pyridinium chloride, lauryl pyridinium chloride, lauryl isiquinoisimide, sodium benzalkonium chloride. Phenol, disodium dihydroxyethyl sulfoisucinyl undecylate, sodium bisammonium, zinc lactate, sodium phenol sulfonate and zinc phenol sulfonate, ketoglutaric acid, terpene alcohols such as for example farnesol, chlorophyllin copper complexes, α-unsaturated glycerol ethers having a branched or linear saturated or unsaturated, optionally hydroxylated C₆-C₈ alkyl residue, more preferably α-(2-ethylhexyl)glycerol ether, available commercially as Sensivas® SC 50 (from Schillke & Mayr), carboxylic acid esters of mono-, di- and triglycerol (for example glycerol monolaurate, diglycerol monocaprate), lantibiotics and plant extracts (for example green tea and constituents of inden blossom oil) can also be used.

Further preferred deodorant active ingredients are selected from components having a prebiotic effect, which are understood according to the invention to be components that inhibit only or at least predominantly the odor-forming bacteria of the skin microflora but not the desirable, i.e. non-odor-forming bacteria that belong to a healthy skin microflora. These explicitly include the active ingredients disclosed in the laid-
open patent applications DE 10333245 and DE 10 2004 011 968 as having a prebiotic effect; among them are conifer extracts, in particular from the group of Pinaceae, and plant extracts from the group of Sapindaceae, Araliaceae, Lamiaceae and Saxifragaceae, in particular extracts of Picea spp., Paulinia sp., Panax sp., Lamium album or Rhus nigrum, and mixtures of these substances.

Enzyme inhibitors include substances that inhibit the enzymes responsible for breakdown of sweet, in particular arylsulphatase, β-glucuronidase, aminoacylase, esterases, lipases and/or lipoxigenase, for example triaryl citric acid esters, in particular triethyl citrate, or zinc glycinate.

Preferred compositions according to the invention are characterized in that at least one additional deodorant active ingredient is selected from arylsulphatase inhibitors, β-glucuronidase inhibitors, aminoacylase inhibitors, esterase inhibitors, lipase inhibitors and lipoxigenase inhibitors, α-monoalkyl glycerol ethers having a branched or linear saturated or unsaturated, optionally hydrogenated C₆-C₂₂ alkyl residue, in particular α-(2-ethylhexyl)glycerol ether, components having a prebiotic effect, triaryl citric acid esters, in particular triethyl citrate, active ingredients that reduce the number of skin bacteria from the group of Staphylococci, Corynebacteria, Anaerococci and Micrococci, which are involved in odor formation, or inhibit their growth, zinc compounds, in particular zinc phenol sulfonate and zinc ricinoleate, organohalogen compounds, in particular triclosan, chlorhexidine, chlorhexidine gluconate and benzalkonium halides, quaternary ammonium compounds, in particular cetyl pyridinium chloride, odor absorbers, in particular silicates and zeolites, sodium bicarbonate, lantibiotics, and mixtures of the aforementioned substances.

Further preferred compositions according to the invention are characterized in that at least one additional deodorant active ingredient is included in a total amount of 0.1 to 10 wt. %, preferably 0.2 to 7 wt. %, more preferably 0.5 to 5 wt. %, relative to the total weight of active substance in the total composition.

Antioxidative substances can counteract the oxidative decomposition of sweet components and thus inhibit the development of odors. Suitable antioxidants are imidazole and imidazole derivatives (e.g. uracanic acid), peptides such as for example D.L-carnosine, D-carnosine, L-carnosine and derivatives thereof (e.g. aserine), carotinoids, carotene (e.g. α-carotene, β-carotene, lycopene) and derivatives thereof, lipoic acid and derivatives thereof (e.g. dihydrothioic acid), aurothioglucose, propylthiouracil and other thio compounds (e.g. thioglycerol, theiosorbitol, thioglycollic acid, thioredoxin, glutathione, cysteine, cysteine and the glycosyl, N-acetyl, methyl, ethyl, propyl, amyl, butyl, lauryl, palmitoyl, oleyl, γ-linoleyl, oleic acid and glycerol esters thereof) and salts thereof, dialklyl thiocarbonates, diesters of thiodipropionate, thiodipropionic acid and derivatives thereof (esters, ethers, peptides, lipids, nucleotides, nucleosides and salts) as well as sulfoxime compounds (e.g. buthionine sulfoximine, homocysteine sulfoximine, buthionine sulfone, penic., hexa., heptahionine sulfoximine) in very small acceptable doses (e.g. pmol/kg to μmol/kg), also metal chelators (e.g. α-hydroxy fatty acids, EDTA, EGTA, lactoferrin), humic acids, bile acid, bile extracts, catechins, bilirubin, biliverdin and derivatives thereof, unsaturated fatty acids and derivatives thereof (e.g. γ-linolenic acid, linoleic acid, arachidonic acid, oleic acid), folic acid and derivatives thereof, hydroquinone and derivatives thereof (e.g. arbutin), ubiquinone and ubiquinol and derivatives thereof, vitamin C and derivatives thereof (e.g. ascorbyl palmitate, stearate, dipalmitate, acetate, Mg ascorbyl phosphates, sodium and magnesium ascorbate, disodium ascorbyl phosphate and sulfate, potassium ascorbyl tocopheryl phosphate, chitosan ascorbate), isascorbic acid and derivatives thereof, tocopherols and derivatives thereof (e.g. tocopheryl acetate, linoleate, oleate and succinate, tocopherol-5, tocopherol-10, tocopherol-12, tocopherol-18, tocopherol-50, tocopherosanol), vitamin A and derivatives (e.g. vitamin A palmitate), the conifer benzoate of benzoic resin, rutin, rutic acid and derivatives thereof, disodium rutinyl disulfate, cinnamic acid and derivatives thereof, kojic acid, chitosan glycolate and salicylate, butylhydroxytoluene, butylhydroxyanisole, nordihydroguaias in acid, nordihydroguaiaretic acid, trihydroxybutyrophenone, uric acid and derivatives thereof, mannoside and derivatives thereof, selenium and selenium derivatives (e.g. selenium methionine), stilbenes and stilbene derivatives (e.g. stilbene oxide, trans-stilbene oxide). Suitable derivatives (salts, esters, sugars, nucleotides, nucleosides, peptides and lipids) as well as mixtures of these cited active ingredients or plant extracts including these antioxidants can be used according to the invention.

Of this group, tocopherol and derivatives thereof, in particular tocopheryl acetate, and carotenoids as well as butylhydroxytoluene/anisole are preferred as lipophilic, oil-soluble antioxidants.

The total amount of antioxidants in preferred preparations according to the invention is 0.001 to 10 wt. %, preferably 0.05 to 5 wt. % and in particular 0.1 to 2 wt. %, relative to the total preparation.

Complexing substances can also support the deodorizing effect, in that they complex the heavy metal ions (e.g. iron or copper) having an oxidative catalytic effect and render them stable. Suitable complexing agents are selected from the aforementioned complexing agents.

The invention secondly provides a cosmetic product comprising

i) a dispensing device, comprising at least one container including a plunger, which serves as a wall for the container and can be moved by means of a dispensing mechanism (in particular a nut-and-spindle arrangement), at least one outlet, which is fluidically connected to said container,

ii) a composition of the first subject matter of the invention included in said container.

The composition of the first subject matter of the invention can be discharged from the outlet of the dispensing device by actuating the dispensing mechanism. The plunger is moved and the composition of the first subject matter of the invention is pressed in the direction of the outlet. The pressure that develops as a result forces said composition out of said dispensing device through the at least one outlet.

The present application thirdly provides the non-therapeutic use of the compositions of the first subject matter of the invention to reduce or mask body odor.

The present application fourthly provides a non-therapeutic method for reducing or masking body odor, characterized in that in a composition of the first subject matter of the invention is applied to the skin in an effective amount using a suitable applicator. The composition according to the invention more preferably remains on the skin for a period of 1 minute to 24 hours, preferably 2 to 12 hours.

A more preferred embodiment of the invention is characterized by the following points:

1. An anhydrous composition including, relative in each case to the total weight of the composition, at least one antiperspirant active ingredient, at least one oil in a total amount from 20 to 80 wt. %,
at least one fatty alcohol having 12 to 18 carbon atoms, at least one fatty alcohol having more than 18 carbon atoms, with the proviso that the total amount of fatty alcohols is 3 to 12 wt. %, the weight ratio of fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a weight ratio range from 1:1 to 1:3.

2. The anhydrous composition according to point 1, characterized in that the at least one antiperspirant active ingredient is included in an amount from 3 to 35 wt. %, preferably 5 to 30 wt. % and more preferably 10 to 23 wt. %, relative to the total weight of active substance (USP) free from water of crystallization in the total composition.

3. The anhydrous composition according to one of points 1 or 2, characterized in that the oils are included in a total amount from 30 to 80 wt. %, more preferably from 40 to 75 wt. %, particularly preferably from 45 to 70 wt. %.

4. The anhydrous composition according to one of points 1 to 3, characterized in that at least one volatile oil is included as the oil.

5. The anhydrous composition according to point 4, characterized in that at least one volatile silicone oil and/or at least one C8-C16 isoparaffin is included as the volatile oil.

6. The anhydrous composition according to one of points 1 to 5, characterized in that the total amount of fatty alcohols is 4 to 9 wt. %.

7. The anhydrous composition according to one of points 1 to 6, characterized in that relative to the total weight thereof the fatty alcohols having 18 carbon atoms are included in a total amount of 2.0 to 5.0 wt. %.

8. The anhydrous composition according to one of points 1 to 7, characterized in that relative to the total weight thereof the fatty alcohols having 20 to 28 carbon atoms are included in a total amount of 0.8 to 2.0 wt. %.

9. The anhydrous composition according to one of points 1 to 8, characterized in that relative to the total weight thereof the fatty alcohols having 30 to 38 carbon atoms are included in a total amount of 0.6 to 1.5 wt. %.

10. The anhydrous composition according to one of points 1 to 9, characterized in that relative to the total weight thereof the fatty alcohols having 40 to 48 carbon atoms are included in a total amount of 0.2 to 0.7 wt. %.

11. The anhydrous composition according to one of points 1 to 10, characterized in that relative to the total weight thereof, less than 0.05 wt. % of fatty alcohols having more than 50 carbon atoms are included.

12. The anhydrous composition according to one of points 1 to 11, characterized in that the weight ratio of fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a weight ratio range from 1:1 to 1:1.3.

13. The anhydrous composition according to one of points 1 to 12, characterized in that the weight ratio of fatty alcohols having 20 to 28 carbon atoms to fatty alcohols having 30 to 38 carbon atoms is in a weight ratio range from 1:0.5 to 1:2, in particular from 1:0.9 to 1:0.6.

14. The anhydrous composition according to one of points 1 to 13, characterized in that the weight ratio of fatty alcohols having 20 to 28 carbon atoms to fatty alcohols having 40 to 48 carbon atoms is in a weight ratio range from 1:0.1 to 1:1, in particular from 1:0.2 to 1:0.4.

15. The anhydrous composition according to one of points 1 to 14, characterized in that it additionally contains at least one lipophilic thickening agent, in particular of the silicone elastomer type.

16. Non-therapeutic use of a composition according to one of points 1 to 15 to reduce or mask body odor.

17. A non-therapeutic method for reducing or masking body odor, characterized in that a composition according to one of points 1 to 15 is applied to the skin in an effective amount using a suitable applicator.

18. A cosmetic product, comprising

i) a dispensing device, comprising at least one container containing a plunger, which serves as a wall for the container and can be moved by means of a dispensing mechanism (in particular a nut-and-spindle arrangement), at least one outlet, which is fluidically connected to said container,

ii) a composition according to one of points 1 to 15 contained in said container.

The examples below are intended to clarify the invention without restricting its scope thereto. Unless otherwise specified, all stated amounts relate to percentages by weight relative to the total weight of the corresponding composition.

**EXAMPLES**

The following soft solid compositions were produced:

<table>
<thead>
<tr>
<th>Raw material</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dow Corning 9040 Silicone</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Elastomer Blend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclopentasiloxane</td>
<td>69.5</td>
<td>65.5</td>
<td>51.5</td>
<td>66.5</td>
<td>32.75</td>
<td>65.5</td>
<td></td>
</tr>
<tr>
<td>C10-13 isoparaffin</td>
<td></td>
<td></td>
<td></td>
<td>51.5</td>
<td>32.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerosil 300(^1)</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Stearyl alcohol</td>
<td>2.1</td>
<td>3.8</td>
<td>2.1</td>
<td>2.1</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Permaflow 425 alcohol(^2)</td>
<td>2.9</td>
<td>5.2</td>
<td>2.9</td>
<td>2.9</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Def Flo PC(^3)</td>
<td></td>
<td></td>
<td>6.5</td>
<td>6.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talc</td>
<td></td>
<td>11.9</td>
<td>11.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum zirconium</td>
<td>20.0</td>
<td>20.0</td>
<td>20.0</td>
<td>20.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pentachlorohydroxy gly (AAZG 3110)</td>
<td></td>
<td></td>
<td></td>
<td>23.0</td>
<td>20.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum zirconium trichlorohex gly (AAZG 531)</td>
<td></td>
<td></td>
<td></td>
<td>23.0</td>
<td>20.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum chloride (Microdry 3110)</td>
<td></td>
<td></td>
<td></td>
<td>20.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)INCI name: Silica (fumed silica, average particle size: 7 μm, Evonik)
\(^2\)INCI name: C20-40 Alcohols (Baker Petrolium)
\(^3\)INCI name: Aluminum Starch Octenylsuccinate (hydrophobically modified corn starch with a molecular weight of 16,000, AKZO)
The antiperspirant active ingredient was suspended in cyclopentasiloxane with a silicone elastomer and silica. The optional further components Dry Flo PC and tale were likewise suspended. The fatty alcohols were then added while stirring until a thickened soft solid had formed.

The compositions were stable and exhibited no syneresis, even under pressure. The formulations had a light, powdery dry feeling when applied to the skin.

While at least one exemplary embodiment has been presented in the foregoing detailed description of the invention, it should be appreciated that a vast number of variations exist. It should also be appreciated that the exemplary embodiment or exemplary embodiments are only examples, and are not intended to limit the scope, applicability, or configuration of the invention in any way. Rather, the foregoing detailed description will provide those skilled in the art with a convenient road map for implementing an exemplary embodiment of the invention, it being understood that various changes may be made in the function and arrangement of elements described in an exemplary embodiment without departing from the scope of the invention as set forth in the appended claims and their legal equivalents.

What is claimed is:
1. An anhydrous composition comprising, relative in each case to the total weight of the composition:
   at least one antiperspirant active ingredient,
   at least one oil in a total amount from 20 to 80 wt.%,
   at least one fatty alcohol having 12 to 18 carbon atoms,
   at least one fatty alcohol having more than 18 carbon atoms
   including at least one fatty alcohols having 20 to 28 carbon atoms and fatty alcohols having 30 to 38 carbon atoms in a weight ratio range from 0.5 to 1.2,
   with the proviso that
   the total amount of fatty alcohols is 3 to 12 wt.%,
   the weight ratio of fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a weight ratio range from 1:1 to 1:3.

2. The anhydrous composition according to claim 1, characterized in that the at least one antiperspirant active ingredient is included in an amount from 3 to 35 wt.% relative to the total weight of active substance (USP) free from water of crystallization in the total composition.

3. The anhydrous composition according to claim 1, characterized in that the oils are included in a total amount from 30 to 80 wt.%. 

4. The anhydrous composition according to claim 1, characterized in that at least one volatile oil is included as the oil.

5. The anhydrous composition according to claim 4, characterized in that at least one volatile silicone oil and/or at least one C₉₋₁₆ isoparaffin is included as the volatile oil.

6. The anhydrous composition according to claim 1, characterized in that the total amount of fatty alcohols is 4 to 9 wt. %.

7. The anhydrous composition according to claim 1, characterized in that the weight ratio of fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a range from 1:1 to 1:3.

8. The anhydrous composition according to claim 1 characterized in that the at least one fatty alcohol having more than 18 carbon atoms comprises fatty alcohols having 20 to 28 carbon atoms and fatty alcohols having 40 to 48 carbon atoms in a weight ratio range from 0:1:1 to 1:1.

9. The anhydrous composition according to claim 1, characterized in that the anhydrous composition additionally comprises at least one lipophilic thickening agent of the silicone elastomer type.

10. A cosmetic product, comprising
    i) a dispensing device, comprising
       at least one container including a plunger, which serves as a wall for the container and can be moved by means of a dispensing mechanism, and
       at least one outlet, which is fluidically connected to said container; and
    ii) a composition according to claim 1 contained in said container.

11. An anhydrous composition comprising, relative in each case to the total weight of the composition,
    at least one antiperspirant active ingredient,
    at least one oil in a total amount from 20 to 80 wt. %,
    at least one fatty alcohol having 12 to 18 carbon atoms,
    at least one fatty alcohol having more than 18 carbon atoms
    including at least one fatty alcohols having 20 to 28 carbon atoms and fatty alcohols having 40 to 48 carbon atoms in a weight ratio range from 0.1 to 1:1, with the proviso that
    the total amount of fatty alcohols is 3 to 12 wt.%,
    the weight ratio of fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a weight ratio range from 1:1 to 1:3.

12. The anhydrous composition according to claim 11, characterized in that the at least one antiperspirant active ingredient is included in an amount from 3 to 35 wt.% relative to the total weight of active substance (USP) free from water of crystallization in the total composition.

13. The anhydrous composition according to claim 11, characterized in that the oils are included in a total amount from 30 to 80 wt. %.

14. The anhydrous composition according to claim 11, characterized in that at least one volatile oil is included as the oil.

15. The anhydrous composition according to claim 14, characterized in that at least one volatile silicone oil and/or at least one C₉₋₁₆ isoparaffin is included as the volatile oil.

16. The anhydrous composition according to claim 11, characterized in that the total amount of fatty alcohols is 4 to 9 wt. %.

17. The anhydrous composition according to claim 11, characterized in that the weight ratio of fatty alcohols having 12 to 18 carbon atoms to the other fatty alcohols is in a range from 1:1 to 1:1.3.

18. The anhydrous composition according to claim 11 characterized in that the at least one fatty alcohol having more than 18 carbon atoms comprises at least one fatty alcohols having 20 to 28 carbon atoms and fatty alcohols having 30 to 38 carbon atoms in a weight ratio range from 0.5 to 1.2.

19. The anhydrous composition according to claim 11, characterized in that the anhydrous composition additionally comprises at least one lipophilic thickening agent of the silicone elastomer type.

20. A cosmetic product, comprising
    i) a dispensing device, comprising
       at least one container including a plunger, which serves as a wall for the container and can be moved by means of a dispensing mechanism, and
       at least one outlet, which is fluidically connected to said container; and
    ii) a composition according to claim 11 contained in said container.